

ON PUERPERAL AMAUROSIS.

BY

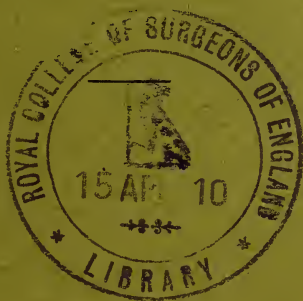
SYDNEY STEPHENSON, M.B., C.M.,

OPHTHALMIC SURGEON TO QUEEN CHARLOTTE'S HOSPITAL, LONDON, ENGLAND, ETC.

WITH A NOTE BY

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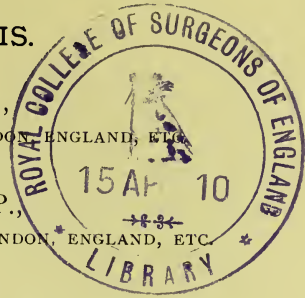
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Cases.

1.—*Albuminuria and headache in a primipara followed shortly after delivery by temporary blindness without ophthalmoscopic changes. No eclampsia. Recovery.*

Mabel T., an unmarried woman of 23 years, was admitted on November 23rd, 1909, to Queen Charlotte's Hospital, London, under the care of Dr. T. W. Eden. She was in the thirty-sixth week of pregnancy. A few hours after admission she was delivered, after a normal labour of 21 hours 20 minutes, of a female baby, weighing 4 lbs. 12½ ozs. The total amount of blood lost during and after labour was estimated at 5 ozs. The urine, tested after admission to Hospital but before delivery, contained one-fourth albumin. The history was to the effect that for four or five years the girl had suffered from headaches after using her eyes, and that these had become much worse during the week immediately before admission, although during that time she had passed the ordinary amount of urine.

On November 25th—i.e., two days after delivery—the patient stated that she had become blind in both eyes soon after the baby was born. Yesterday she was drowsy, suffered from severe frontal headache, and vomited twice in the evening (5 p.m. to 9 p.m.) and thrice in the night. Upon examination, the woman (who weighed 8 st. 12 ozs. before delivery) was found to be well nourished. The breasts were normal, and the uterus was well contracted. The patient groaned slightly with respiration. The tongue was dry (a mouth breather). Her mental condition was one of slight drowsiness. Arteries in neck pulsating. The walls of the radial arteries could be felt to be slightly thickened when pulsation in the vessels had been stopped by pressure of the finger. Kidneys not palpable. Slight œdema of legs. Urine, sp. gr. 1024, was acid, contained a thick cloud of albumin, and 2.9 per cent. of urea. When examined with the microscope, it was seen to include small numbers of white and of red corpuscles and epithelial *débris*. No tube-casts. The amount charted for the twenty-four hours was six ounces only; but the bowels had been opened four times. A slight systolic murmur (not organic) was heard over the pulmonary area. The patient's sight was equal, at the most, to recognizing the light of a flame passed before her eyes. The pupils reacted normally to light. The eyes, examined on this date by Dr. W. P. Herringham, Physician to the Hospital, showed no morbid changes. In Dr. Herringham's opinion, the woman was not suffering from uræmia. There had been no convulsions.

On the morning of the following day (November 26th) the patient said she felt much better; her headaches were improved, vomiting had ceased, and she could see light. When I examined the woman on the same day, I found the pupils widely (7mm.) dilated by the homatropine that had been applied to the eyes to facilitate examination of the fundus oculi. Sight, apparently similar in the two eyes, was equal to seeing large objects held near her eyes but not to recognizing their nature. The media were transparent, and the fundi showed no departure from normal. Slight myopic astigmatism in the right eye and mixed astigmatism in the left eye. The urine (of which 16 ozs. were charted, the bowels having been opened six times) contained over 2 per cent. of albumin as estimated by Esbach's instrument.

On November 27th, although there was no vomiting, the patient still complained of headache. She had passed large quantities of urine (82 ozs. charted, despite four actions of the bowels). The urinalysis was as follows: reaction acid, sp. gr. 1011, urea 1·6 per cent., and a trace only of albumin. The urine contained a few leucocytes, and some cell *débris*, but no tube-casts.

On November 28th the patient could recognize fingers held up at a distance of six feet from her eyes. The headaches were both less frequent and less severe. She was stated to be passing much urine, a sample of which had a specific gravity of 1024, an acid reaction, and contained a trace of albumin and 3·3 per cent. of urea, together with a few leucocytes and yeast cells but no tube-casts.

On November 29th the patient stated that she could see quite clearly. Pupils reacted normally. No headaches. Urine (10 ozs. charted) slightly acid, sp. gr. 1028, trace of albumin, no sugar or deposit. When I examined the patient, I found that she could read ordinary newspaper type with her right and with the left eye the capital headings. The fundi presented no changes. The pupils reacted normally. No obvious restriction of the visual fields (tested roughly). Her mental condition was brighter than when I saw her before, and might pass as normal.

November 30th.—38 ozs. of urine were charted. Its specific gravity was 1012, its reaction was acid, and it still contained a cloud of albumin, but no tube-casts. On December 2nd the amount of urea contained by the urine was 2·8 per cent. On December 6th the fluid still contained a trace of albumin. On December 8th, when the patient was discharged, she stated that she could see quite well. Her general condition was good, the urine was free from albumin, and the baby was flourishing.

During the patient's stay in hospital, which extended to fifteen days, her temperature rose to over 100° F. on two occasions only (November 25th and 26th), when it reached 100·4° F. and 100·2° F. respectively. The lochia became "pink" on the third day after labour, and "pale" on the seventh day.

The treatment included purgatives, hot-packs, and an exclusive milk diet. On the evening of November 25th antipyrin was administered to relieve headache, and on the next day a sedative mixture of sodium salicylate, with potassium iodide and the bromides of potassium, sodium, and ammonium was prescribed.

The patient was seen last on December 14th, 1909—*i.e.*, twenty-one days after delivery and six days after she left Hospital—when her condition was as under.—She looked and felt well. R.V. 6/18ii and No. 1 Jaeger at 23 c.m. L.V. 6/36 and No. 2 Jaeger (words) at 25 c.m. Pupils (dull morning) 3·5 mm. and active to light. The visual fields for a 5 mm. white square showed slight peripheral contraction, not more perhaps than the dull light of a December morning in London would account for. Refraction (estimated under a cycloplegic):

$$\text{R.E. } \frac{-0.5}{-0.5 \text{ 150}^\circ} = 6/6. \quad \text{L.E. } \frac{+0.5}{-2.0 \text{ 15}^\circ} = 6/12i.$$

The patient complained of a difficulty in reading, especially with her left eye, and of "colours" when she closed her eyes.

Summary of Case.—A woman of 23 years lost her sight completely and suddenly soon after a normal labour, before which she had suffered from severe headaches and her urine was known to contain albumin. At the same time as the sight was lost, she was affected with frontal headaches, vomiting, and a semi-somnolent condition. The pupils retained their direct action to light, while the fundi showed no morbid changes. The urine, passed in good quantity, contained at the time 2·9 per cent. of

urea, a considerable amount of albumin, some erythrocytes and leucocytes, but no tube-casts. Improvement in sight speedily set in, so that two days after delivery, light could be seen as such, and on the following day, large objects could be recognised. Five days after delivery, fingers could be recognised at a distance of six feet from the eye, and on the next day, ordinary newspaper type could be read with one eye. Twenty-one days after delivery, the sight of the right eye was normal, and that of the left one-half normal, errors of refraction being corrected by suitable glasses in each case.

2.—*Albuminuria, temporary blindness without ophthalmoscopic changes, and eclampsia in a primipara. Recovery.*

Winifred E., aged 20 years, was admitted in the first stage of labour to Queen Charlotte's Hospital, under Dr. A. F. Stabb, on January 13th, 1910. According to the history given, the woman had been passing very little urine and her legs had been swollen for about three months. Upon admission, the urine became almost solid when it was boiled. The forceps were applied as soon as the cervix was fully dilated, $4\frac{1}{4}$ hours after admission, and delivery was readily effected. The perineum, however, was slightly torn, but was sutured at once. The total duration of the labour was $14\frac{1}{2}$ hours (1st stage, 14 hours; 2nd stage, 15 minutes; 3rd stage, 15 minutes). The baby was a female weighing 8 lbs. $\frac{1}{4}$ oz., and measuring 21 inches. Some 25 ozs. of blood were lost before, during, and after the expulsion of the placenta. As soon as the patient came round from the chloroform that had been administered, she complained of headache and vomited once. It was then found that she was completely blind, although the pupils retained their normal appearance and preserved their normal reaction. After some six hours of blindness, she developed a typical eclamptic fit, which lasted for about one minute, and which was followed by a period of stupor continuing for some ten minutes. When she regained consciousness, the sight had returned. On the following day the woman was passing much water, and the œdema had markedly diminished. On January 17th—*i.e.*, four days after delivery—the patient expressed herself as feeling much better. The œdema was much less. The radial arteries were thickened. The patient could read, readily distinguish things about the ward, and although the pupils were dilated with atropine, could tell the time by a watch. The media were clear. Optic discs, retinal vessels, and fundi generally showed no ophthalmoscopic changes whatever.

There was no return of the eclampsia, and the further history of the patient, who left the Hospital well on January 31st, 1910, was uneventful.

Successive urinalyses were :

	Amount.	Sp. Gr.	Reaction.	Albumin.	Sugar.	Urea.	Deposit.
Jan. 13th ...	—	1,012	Acid	Much	—	—	Nil
Jan. 14th ...	78 ozs.	1,023	Acid	Cloud	Nil	2.2 %	A few granular casts and blood corpuscles, red and white
Jan. 15th ...	30 ozs.	1,010	—	Trace	—	—	A few hyaline casts and pus cells
Jan. 16th ...	50 ozs.	1,020	Acid	Trace	—	—	Nil
Jan. 18th ...	58 ozs.	1,012	Acid	Trace	—	—	Nil
Jan. 21st ...	—	1,012	Acid	Cloud	—	3.4 %	Urates
Jan. 26th ...	—	1,011	Acid	Nil	—	—	Phosphates

Literature.

Literature contains scattered cases in which amaurosis or amblyopia, apparently not dependent upon uræmia, supervened during pregnancy, labour, or child-bed. Many were accompanied by eclampsia, and nearly all by albumin in the urine.

1. *Pregnancy*.—Setting aside such cases as those of Segar (1672), Albrecht (1690), Alberti (1732), and Beer (1792), the cause of which must now remain purely conjectural, instances of amaurosis during pregnancy have been described by Merriman, Lever, Kraus, Fourgeaud, Bomal, Ramsbotham, Bowman, Simpson, Williams, Angear, Hecker, Webster, Adler, Sourdille, Fauconnier, and Jardine.

Samuel Merriman¹ recorded a case of the sort in the year 1838. A woman, who had nearly completed the eighth month of her second pregnancy, became affected with pains in the head, and while cutting bread and butter for her child, complained that she could not see the loaf. Her husband led her to a chair, and after she had sat awhile, she recovered her sight, so that the man left her to go to his work. But in the course of the morning she lost her sight again, and this was soon followed by labour, which resulted in the birth of a premature living child. Soon after the mother was put to bed, she desired to have the baby brought to her, as she wished to kiss it, although she could not see it, and almost immediately she developed a convulsive fit. After one or two other fits, she became comatose, but she ultimately got well.

Another early case of partial amaurosis with pregnancy was that of John C. W. Lever², published in the year 1847. A 4 para, aged 31 years, was pregnant of her fifth child, and soon after "quickening," whilst engaged in some plain needle-work, she suddenly felt a peculiar sensation in the eyeballs, and found, on opening the lids, that she could merely see the outline of objects their centres being totally dark. This state of things continued, with some slight remission, up to the full term of gestation, when she was delivered, after an easy labour, of a living child. The pupils, which were large, contracted, although sluggishly, to the stimulus of light. The urine was passed in full and sometimes large quantities, and was usually pale. Within a week of the confinement there was decided improvement, and at the end of five weeks she went into the country, where she spent about three months. On her return, she could see perfectly.

Another of Lever's cases was reported in 1854 by Fleetwood Churchill.³ A lady, about thirty years of age, nearly eight months pregnant, suffered from total amaurosis in one eye, and from very imperfect sight in the other. She had had two fits and her urine contained albumin. Since the sight became more and more impaired, an operation for the induction of premature labour was resorted to. Several weeks after, the lady had recovered sight enough to play a game of cribbage.

A typical instance of ante-partum amaurosis was described in 1861 by L. G. Kraus^{3a}, of Leipnik. The patient, a strong healthy woman of 45 years, was the mother of five children. Towards the end of her sixth pregnancy she complained of insignificant pain in the head. On November 5th she experienced violent pain in the right cheek and in the head. Then, feeling some pain in the lower part of the back, and thinking this was the beginning of labour, she asked for a candle to be lighted, it being about 3 o'clock a.m., but when that had been done, found, to her intense annoyance, that she could not see the light. A couple of hours later she was delivered of a healthy boy. The placenta was removed half an hour afterwards. There was no unusual loss of blood. When the woman was examined by Kraus, three hours after the onset of blindness and one hour after delivery, she was found to be restless,

with red face, and strongly beating carotids and temporals. The radial pulse was 75 per minute, and hard. There were complaints of violent headache. The mother was indifferent to her child. Sight was abolished. The pupils, moderately dilated, were inactive to light. On November 7th the urine was examined and found to contain no albumin. Ophthalmoscopically, the choroid was reddish and over-filled with blood; the retina showed no changes; the vitreous humour was cloudy. On November 8th the urine was passed in great quantity. On November 9th Kraus was recognised by the patient upon entering the room where she lay. The pupils, although very dilated, reacted somewhat to light. Towards 2 o'clock that afternoon the sight again slowly failed, so that the woman was blind at nightfall. On the following day, however, vision was restored, while the pupils were of normal width and reacted well.

During the pregnancy of Fourgeaud's patient, the face became œdematous, and her sight so defective that it was difficult for her to distinguish persons a few feet from her and she was unable to read printed matter. The urine contained one-third albumin. The condition was regarded by Fourgeaud⁴ as one of "puerperal uraemia." Six days later the albumin was considerably less, but, on the other hand, the amblyopia had gradually increased to such a degree that the woman was unable to recognize common objects at hand. She was delivered of a seventh months' dead tœtus. The following morning found her paraplegic, with involuntary discharge of fœces and retention of urine. Her eyesight had now almost entirely gone. Nineteen days after the confinement the woman could move her left leg and distinguish persons in her chamber. Thirty-three days after this, she was able to read print.

A woman, aged 30 years, lost her sight suddenly and completely at 9 a.m. towards the end of the eighth month of her fifth pregnancy. When examined at 2 p.m. on the same day by Bomal⁵, the pupils were widely dilated and immobile, sight was abolished, and there were complaints of headache. There was no œdema. The woman was blooded, and thirty grammes had scarcely been taken from the vein when she exclaimed that she could see the light, and after thirty more grammes had been allowed to flow, that she could recognize the assistants. After one hundred grammes had been evacuated, the patient became comatose. In the sequel, sight was regained completely. Five weeks after this alarming experience, she gave birth to her fifth child.

Ramsbotham's case⁶ was in a woman who began to lose the sight of both eyes in the last few months of her first pregnancy. When examined a fortnight before labour, she could only just point out the position of the window. The condition of the eyes became so much worse that "she could not distinguish the brightest sunshine." There was no headache, drowsiness, or loss of consciousness. Four days prior to labour, tingling and numbness were experienced in the right arm and leg. The labour was terminated by craniotomy. After the third day the patient began slowly to mend. In a month she could distinguish objects; in six weeks she could tell the time by a watch; and fifty-six days after the baby was born, her sight was completely restored.

The woman was known to have had one child afterwards without any return of the symptoms.

Sir William Bowman's case⁷ appears to belong to this class. During pregnancy the patient rather suddenly lost her sight in great measure. There were no headaches. Oedema was present below one of the eyes. The urine was excessively loaded with albumin. The ophthalmoscopic appearances were normal. The lady was brought to bed of a still-born fœtus thirty-three days after she consulted Bowman. The sight, however, only partially returned.

Sir James Y. Simpson⁸ mentioned a couple of instances of ante-partum amaurosis:

1.—A woman towards the end of her second pregnancy developed a swollen face and intense headache, and her urine was found to be highly albuminous. Very shortly such a degree of blindness came on that she could not distinctly see objects and persons. She was bled freely. Labour pains began on the day of the blindness. Under chloroform, she was delivered of a premature child. The amaurosis in great measure disappeared after the bleeding, and the patient's recovery after delivery was speedy and perfect, the albuminuria passing off within a week subsequent to her confinement.

2.—Several weeks before the expected time the patient complained of very imperfect sight. The urine was highly albuminous. During the few succeeding weeks the amaurosis increased, and, in addition, symptoms of hemiplegia came on. No convulsions. After delivery, this female recovered her sight, although she still suffered from slight hemiplegia.

The case reported by Henry W. Williams⁹ may also have belonged to this group, although in most of the other cases with which I am acquainted the amaurosis was bilateral and equal. A 6-para, 37 years of age, suffered, as she had on former occasions, when between three and four months *enceinte*, from œdema of the face and lower limbs. Twelve days before confinement "everything appeared quite black to her right eye," while with both eyes open, she perceived "an appearance as of vapour over a hot stove." During the progress of labour, albumin was found in the urine. Within an hour of her delivery of a dead eight months' child, the woman could distinguish with her right eye the outline of a picture frame hanging opposite her bed. This improvement in sight increased day by day. The fundi were not examined. Williams himself reported the facts only from hear-say.

Several weeks before accouchement, Angear's¹⁰ patient became so blind that she could not tell whether the lamps were lighted or not. The amaurosis had existed for twelve or fourteen hours before Angear saw the case. Labour was induced, and a living child was born. The blindness lasted for at least twenty-four hours, and then gradually passed away.

Hecker's¹¹ case was exceptional, inasmuch as the ante-partum loss of sight took the form of hemeralopia.* A 6-para, aged 29 years, who was admitted unconscious, was delivered spontaneously after nine fits. When she regained her senses, she stated that for four weeks she had been unable to distinguish objects near to her at night (hemeralopia). The condition remained without change when she was discharged six days after labour.

In the eighth month Webster's^{11a} patient had convulsions which lasted all one night, and in the morning she was found to be blind in both eyes, without ophthalmoscopic changes. Premature delivery was effected within twenty-four hours. The child lived, and the mother recovered.

Adler's¹² case.—After headache and vomiting, a primipara, aged 22 years, who was between the sixth and seventh month of pregnancy, was seized with tremors of the face and arms, and was admitted in that condition. After three such attacks of eclampsia, it was found that she was totally blind. The pupils were wide and motionless. The urine contained 10 per cent. of albumin (Esbach). After premature labour had been induced, albumin disappeared from the urine, and fingers could be recognized at a distance of $\frac{1}{4}$ metre. Eight days after the labour, vision was equal to unity ($V.=6/6$).

* In a remarkable case related by Weinstein (*Ueber Nacht- und Tag-Blindheit*, 1858, Würzburg), a woman, 29 years of age, developed hemeralopia in three out of four successive pregnancies. The ailment, which was of paroxysmal type, commenced with gestation, and from the fourth month onwards was complete, so that the woman is said to have been unable to distinguish anything from sunset to sunrise: the eyes were examined by Welz, but with negative results. During an epidemic of night-blindness described by Fleury and Frechier (*Med. Chir. Rev.*, Vol. XXXVII, 1842, p. 193), it was found that pregnant women were affected more than other people. Kubli (*Arch. f. Augen.*, Vol. XVII, 1887, p. 409) among nineteen women with hemeralopia, ascertained that six were pregnant.

The main facts of the case reported by Gilbert Sourdille,¹³ of Nantes, were as follows.—A woman, aged 34 years, in the fifth month of her first pregnancy, was seized with vertigo, obnubilation of sight, and great difficulty in recognizing near objects, a group of symptoms succeeded in the course of two or three days by sudden and complete loss of sight and eclampsia. The puerperal convulsions lasted for four days, and ceased only after the expulsion of a dead foetus. Blindness, however, remained absolute for several days, and then little by little improved somewhat. The urine included a notable amount of albumin. When the woman was examined by Sourdille a month after the commencement of the amblyopia, sight did not exceed one-twelfth normal, the pupils (unequal) reacted to light, and no ophthalmoscopic lesions could be found. In particular, the visual fields showed neither central scotoma nor marked peripheral contraction. Albumin had disappeared from the urine. Mental symptoms—as, for example, slowness of the memory and intelligence—were present. After upwards of seven weeks' treatment, the patient was discharged, her vision then being two-thirds normal, but the power of reading in comfort was not recovered until forty-three days later.

Fauconnier's¹⁴ case concerned a primipara, aged 36 years, who sought admission to the Hôtel-Dieu, Paris, on account of sudden loss of sight which had taken place the previous afternoon. So intense was the amaurosis that she was unable to tell day from night. The urine contained a considerable amount of albumin. During artificial delivery eclampsia supervened, for the relief of which chloral was given *per rectum* and chloroform was administered. The baby was eventually delivered with forceps. When consciousness was regained, the woman stated that she perceived a certain sensation of light. Nothing abnormal could be found in the fundus oculi, examined with the ophthalmoscope at this stage. Some five hours after delivery the patient began to recognize objects, which looked as if wrapped in fog. On the next day sight was restored, but "very slight œdema of the disc, less marked on the left than on the right side" is said to have been present. The urine still contained albumin, although in much less quantity.

Jardine's¹⁵ case was an instance of amblyopia rather than of amaurosis. The main facts are as follows.—A 1-para, aged 22 years, was admitted unconscious on January 20th. The urine, which was albuminous, contained granular and epithelial casts and red blood corpuscles. On January 23rd the woman was delivered naturally of a seven months' macerated foetus. The placenta was apoplectic and showed small areas of fatty change. According to the history obtained, there had been swelling of the face and legs about the mid-term of pregnancy. This improved (without treatment) until some four weeks prior to admission, when the swelling returned. Three weeks before labour the eyelids became very puffy. There was abdominal pain. Her eyesight also was affected, there being often "a mist before the eyes." Three days before admission, there was headache and gastric pain and dimness of vision. On the day before admission the woman was found lying unconscious on the floor, and this was followed, after an interval of some hours, by severe fits. Dr. Ernest Thomson, who examined the eyes, reported that the right fundus was normal, but that in the left a thin hæmorrhage, about the size of a split pea, lay external to and above the macular region. When the woman was discharged on February 3rd, the albumin in the urine amounted to $\frac{1}{4}$ per 1,000, Esbach.

2. *Labour*.—As regards amaurosis coming on during the actual progress of labour, the most remarkable case with which I am familiar was reported by Matteson¹⁶ in a primipara, who, while in the throes of child-birth, became blind, totally and instantly. Although it was broad daylight at the moment, the

patient could not appreciate the faintest glimmer of light. The pupils were moderately dilated. The labour terminated in half-an-hour. For two days the lady remained in total darkness. On the fourth day she could tell where the windows were, and on the next her sight was completely restored. There was no dropsy. The kidneys were acting freely. Albumin was not present in the urine, examined as soon as practicable after delivery.

Other cases have been published by Dewees, Ringland, Crosse, Greve, Decoin, Hood, and Ellett.

Dewees¹⁷ narrates the case of a woman, aged 24 years, pregnant for the first time, who, while in labour, cried out with pain in her head, declared she could see no one in the room, and in a few minutes was seized with convulsions. A dead child was delivered by means of the forceps, and this was followed by the birth of a living child. The mother had no return of the fits, and she rapidly recovered her usual health. Her eyesight, however, did not return so as to discern objects for several days, and her vision was very feeble for several weeks.

Ringland's¹⁸ case was observed in the first pregnancy of a woman, 24 years of age. When in labour, the os uteri being then the size of half-a-crown, she complained of headache and of failing vision, and half-an-hour later sight had completely gone. The pupils were dilated and quite inactive to light. Seven days after delivery, the woman could read even small type at a considerable distance. When discharged a few days later, she was perfectly well and could see as clearly as she had ever done. There were no convulsions in this patient. The presence or absence of albumin in the urine was not mentioned.

A case of intra-partum amaurosis was published by John Green Crosse¹⁹ in the year 1851. A woman, under 30 years of age, was in her first pregnancy. The labour began with a convulsion, the pupils were greatly dilated, and eyesight and sensibility were lost. The delivery was effected by forceps. Bleeding and blistering were freely practised. The convulsions ceased, and vision, which had been quite lost for several days, at length returned, and there was perfect recovery.

Greve's²⁰ patient, a primipara, aged 26 years, whose face and feet had become cedematous in the last week of pregnancy, complained of loss of sight when labour pains commenced. This was followed, first, by a feeling of anxiety and of sickness, and, then, by eclampsia. When examined by the author later in the day, the eyes were quite insensitive to the stimulus of light. The urine (withdrawn by catheter) was considerably albuminous. The delivery of a male infant by forceps was followed by further eclamptic attacks, of which, in all, it was computed that there were at least twenty-three. Three days after delivery the woman, then fully conscious for the first time, was found to have recovered her sight, although the urine still included a considerable amount of albumin. Puerperal mania then supervened, and lasted for some seven days. Ten days after labour the urine contained traces only of albumin.

A 7-para, aged 42 years, was seized with eclampsia at term when labour had just commenced. When examined by Decoin²¹ shortly afterwards, the woman was semi-conscious, sight was completely lost, and the urine contained much albumin. A couple of days later, the patient could recognise persons and objects, and the urine, when examined, was found to include very little albumin. Three days after the onset of eclampsia and amaurosis, the patient was delivered of a female child. After labour her sight was good, and her urine free from albumin.

Jacomb Hood's²² case was as follows.—A primipara of 19 years, was admitted to Queen Charlotte's Hospital, London, with a faint trace of albumin

in the urine. Labour began twenty hours after reception, and when the patient had been in labour for twelve hours, she suddenly complained of blindness, and five minutes later had a convulsion, which lasted for about three minutes. The urine contained one-fifth albumin. The ophthalmoscope is stated to have shown "slight pallor of the disc, but no retinitis." Delivery, which was by forceps, was followed by nine more convulsions. The patient gradually recovered her sight, and when she left the Hospital on the fifteenth day, she was able to read small type.

E. C. Ellett²³, of Memphis, was consulted by a woman, aged 35 years, the mother of three children. In her first two pregnancies she had suffered from toothache and neuritis of the branches of the brachial plexus. Relief followed delivery. The neuritis recurred in the earlier months of her third pregnancy. Two weeks before confinement her urine was of normal specific gravity and contained no albumin. When in labour she complained of reduction of sight to the mere perception of light. For the first twenty-four hours after delivery there was complete suppression of urine. In the next twenty-four hours not more than one ounce of urine was passed, and this was highly albuminous. After this the secretion increased and the albumin lessened. Two weeks after the confinement Ellett found vision practically normal, fields normal, and fundi normal except for the fact that they were pale. The urine was normal as regards quantity and specific gravity, and included no albumin.

3. *Child-bed*.—To pass to examples of post-partum amaurosis more strictly comparable with my own, such cases have been reported after labour by Dewees, Cunier, Litzmann, Eastlake, Simpson, Weber, Reuling, Walliser, Hecker, Markuse, Eliasberg, Woods, and Jardine.*

In Dewees's case¹⁷, a woman, aged 26 years, pregnant of her first child, was seized with terrible convulsions at the beginning of labour. The labour was completed by forceps, after which she remained insensible to everything for forty-eight hours. She then gradually recovered her senses. She was completely blind for two weeks, and then began to see imperfectly, but it was six weeks before she could discern objects distinctly.

Florent Cunier²⁴ narrates (with much circumstance) particulars of a lady who was struck with blindness after labour. Whilst she was in labour, convulsive movements of the face and lower limbs supervened. Immediately the baby was born, the convulsions became very violent, and on coming to herself an hour later, the patient exclaimed that she had lost her sight. Although the room was well-lighted, she believed that she had been plunged into the deepest darkness. When examined by Cunier four hours later, the pupils were widely dilated, and a candle passed before her eyes evoked no sensation of light. Forty-two hours after the onset of the blindness, the pupils were smaller and reacted to light, and the patient could tell the direction of the windows and distinguish the movements of Cunier's hand. Five and a half hours later, amid the general rejoicings of the family, it was found that the woman had completely recovered her sight. The pupils were then normal as regards both size and action.

An 8-para, 38 years of age, came under Litzmann's²⁵ care in the last month of pregnancy affected with oedema of the legs, hands, and face, dizziness, headache, and temporary obscurations of sight. Her obstetric history was

*Although Sharkey's case (*Dublin Hospital Gazette*, 1860, p. 85) was described as one of "hysterical amaurosis," yet it may possibly belong to the group now under discussion. On the fourth day after delivery, the patient, a primipara, aged 19 years, was seized with a series of most alarming fits, accompanied by screaming, fainting, and delirium, with convulsive movements. She went perfectly blind. Next day the blindness continued, and the pupils were inactive and in a medium state of dilatation. Thirteen days after the onset of the symptoms the patient had recovered.

of a most interesting nature.—Her first pregnancy terminated in the birth of a dead child twelve days after the onset of violent eclampsia. The second and third pregnancies were uneventful. The fourth, however, was complicated with eclampsia in the eighth month, and ended in the birth of a dead baby. The fifth pregnancy was normal, but amaurosis came on in the early part of the puerperium, and speedily disappeared after the application of leeches to the head. The sixth, complicated with eclampsia in the middle of the sixth month, resulted in the birth of a dead child. The seventh was normal; but soon after labour the woman complained of pain in the head, became amaurotic, and had two slight convulsions, after the cessation of which the power of sight was restored. The eighth ended in abortion at the third month. It is of importance to note that in the later period of almost all her pregnancies, Litzmann's patient suffered from headache, swollen face and hands, lessened excretion of urine, and temporary disturbances of vision.

Eastlake's²⁶ case is almost classical. His patient, a woman of 34 years, who had borne nine children at term, had always enjoyed good health. On the second or third day after the birth of her second child and all subsequent children, she suddenly became more or less unconscious and totally blind in both eyes. When this female was seen by Eastlake, three days after her last confinement, she could not tell light from dark. There was no albuminuria. The eyes were examined by Zachariah Laurence, who found the fundi normal with the exception of a somewhat contracted state of the retinal arteries. Under tonic treatment the ocular condition appears to have improved considerably.*

The main facts of the case of recurrent post-partum amaurosis recorded by Sir James Y. Simpson⁸ are as follows:

A woman, *ætat* 36 years, the mother of six children, became totally blind in the course of a single night 48 hours after the birth of her fifth baby. The blindness passed away completely in the course of a few days. Her urine at the time was highly albuminous. During the second week following the birth of her sixth baby the patient again became blind, although the blindness did not entirely disappear as in the former attack. The urine still contained albumin.

Weber's²⁷ cases, four in number, were briefly as under:

1. A woman, aged 18 years, was seized at the beginning of labour with eclampsia. After six eclamptic attacks she was delivered with forceps. On full recovery from the chloroform which had been given, the patient found that she was entirely blind: there was not even perception of light. The pupils were wide and motionless. Urine, passed in small amount, contained much albumin. After three days light was recognized, and after five, vision was quite restored. No albumin was found when the urine was examined on the sixth day after labour.

Other pregnancies, it is interesting to note, were followed by no untoward consequences.

2. This case occurred in a woman, aged 42 years, the mother of thirteen children. A convulsion followed expulsion of the "waters," and this was succeeded by two other fits of less intensity. After the patient had recovered consciousness, the head was painful and there were flashes of light before the

*John C. W. Lever (*Guy's Hospital Reports*, Vol. V., 1847, p. 18) alludes to a case where amaurosis took place in two successive pregnancies. Again, Sichel (*Annales d'Oculistique*, T. XIX, 1848, p. 140) mentions the case of a female who developed amaurosis in six successive pregnancies, sometimes towards the end of gestation and at others during accouchement. Despite the complete blindness, cure resulted on each occasion. Precise details, however, are wanting of these interesting cases.

eyes, and ten hours later she became completely blind. On the fifth day the patient could tell light from dark, and on the next day sight was fully restored. Even after several weeks the urine contained much albumin.

Two subsequent labours were free from either eclampsia or amaurosis.

3. An obese woman of 40 years, who had had six children without accident, developed headache and sparks and flashes before her eyes after the birth of her seventh child. Six hours later, amblyopia, and four hours after that, amaurosis of so complete a description that she possessed the faintest perception only of a bright light. The blindness had improved in a fortnight, and had disappeared at the end of a month. Albumin was never found in the urine of this patient.

A second confinement, which occurred eighteen months later, was followed by no unusual symptoms.

4. The last patient was a 3-para, aged 30 years. Seven hours after labour complete blindness was ushered in by pain in the forehead and temples. The urine was both scanty and albuminous. A few hours after the amaurosis the woman had a severe eclamptic fit, which was followed by two others. Morphia and chloroform were given, and when full consciousness was regained, objects could be clearly seen by the patient.

It would seem that the case reported by George Reuling²⁸ belongs to this class. A woman, aged 30 years and weighing over two hundred pounds, was seized about a week after parturition with violent pain in the eyes, followed two weeks later by a failure of vision culminating (after twelve days) in inability to see even the motion of the hand. In six days there was recovery of fair sight, followed by complete cure. The ophthalmoscopic appearances were almost negative. There was apparently no albumin in the urine. The condition was ascribed by the author to "retro-bulbar neuritis."

Walliser²⁹ reported the case of a primipara, aged 18 years, who was affected with post-partum amaurosis. Labour began at 7 a.m., the waters escaped at 10 a.m., and the baby was born at 11 a.m. At the moment when the occiput disengaged itself, the woman was seized with convulsions, and the pains, strong until then, ceased. The eclampsia came to an end shortly after the placenta had been removed towards mid-day. At this moment the patient requested that the lamp might be lighted, as she could not see her baby, and it was with difficulty that she could be persuaded that it was full noon. When examined by Walliser twenty hours after accouchment, the pupils were dilated and insensitive to light. The urine contained a little albumin. On the following day the pupils reacted slightly to the light of a candle, and the patient could tell light from dark. Next day fingers could be counted. Improvement continued, and a fortnight after labour, the patient was able to read a newspaper with ease.

Under the name of "Amaurosis uræmica" Paul Markuse³⁰ reported a case of post-partum amaurosis, observed in a woman of 42 years, who had given birth to nine children without accident during her eighteen years of married life, and who had always enjoyed good health. But about five weeks before delivery her urine had become dark and scanty and her ankles swollen. Whilst in labour, headache made its appearance, and soon increased to an almost unbearable degree. Soon after the baby was born, vomiting came on, and this had lasted for scarcely a quarter of an hour when the patient suddenly went blind in both eyes. Markuse, who examined the patient some eighteen hours after labour, found the woman exhausted but conscious, free from convulsions, and continually calling out "My head!", "My head!" The pulse was about 100 per minute, hard, and strikingly tense. The urine, of which not quite half a litre had been passed in the last twenty-four hours,

contained 1 per cent. of albumin (Esbach). The pupils were equal and active to light. Blindness was complete. The eyes were not examined with the ophthalmoscope. Next day the urine (1.25 litres in the twenty-four hours) contained only 1 per 1,000 albumin; and a candle flame held close to the eyes was noticed. Two days later the woman could recognize those standing about her. On the following day large letters could be read, and there was no contraction of the field of vision. Two days after that, the woman, who could read small print, said that she could see almost as well as she ever did. She was discharged well twenty-one days after her confinement, there then being a trace of albumin in the urine. It is important to note that eclampsia was not present at any time in the history of this case.

J. Eliasberg³¹, of Salonica, placed on record the following instance of post-partum amaurosis.—A woman, aged 27 years, had borne four children without accident. During the last month of her pregnancy her legs became œdematous. Labour occurred (it was said, without the woman's cognizance) towards mid-day on January 26th. When examined half an hour later, there was profound depression, atrocious pain in the head, and complete amaurosis. Three hours after labour, when Eliasberg saw the patient, quantitative perception of light only was present, although the pupillary reactions were normal and the fundi were free from morbid changes. The amaurosis, which was regarded as "uraemic" by the author, disappeared at the end of two days. The urine was diminished in amount; there was no eclampsia.

Hecker¹¹ has the following case.—A primipara, aged 23 years, who had very little albumin in the urine, and who presented no œdema, was delivered of a living boy by forceps after five eclamptic attacks. Total blindness then supervened, without any change being visible in the retinae. On the fourth day after delivery fingers could be recognized, and in ten days the patient was discharged with normal sight.

Hiram Woods³² mentions a case of post-eclamptic amaurosis.—A woman, 22 years of age, developed seven or eight convulsions towards the end of her first confinement. After the second of these fits her sight disappeared. When examined by Woods a few hours later, there was not even perception of light, although the fundus of each eye was normal. This female remained blind for ten days, and then recovered. Hemiplegia, however, persisted for three weeks.

A couple of succeeding pregnancies were followed by no trouble.

Two well-recorded cases by Robert Jardine¹⁵ are of considerable moment:—

1. A woman of 40 years was delivered of her fourteenth baby on January 9th. For some days prior to delivery her legs had been swollen. Two hours and a-half after labour she complained of severe frontal headache, and of being only just able to discern light. The dilated pupils were equal, and reacted readily to light. A slight internal squint of the left eye was thought to be present. The urine contained albumin (about $3\frac{1}{2}$ per thousand), copious blood, and granular and blood casts. The face was puffy, and there was moderate œdema of the legs. At night there was a severe fit, which lasted for about four minutes. On January 12th the patient could see white objects before the eyes and tell that there were people in the room, and an ophthalmoscopic examination (carried out by Dr. Ernest Thomson) revealed no morbid changes. On January 14th sight was quite clear. On January 20th the woman was well, but the urine still contained a trace of albumin ($\frac{1}{4}$ per thousand.)

2. A 5-para, aged 38 years, developed three fits within $6\frac{1}{2}$ hours after delivery of a premature dead female child. Her urine was loaded with albumin. There were severe headaches. Sight was reduced to perception of

light. The amaurosis disappeared in a day or so, a few hours after the fits had also ceased. The albumin had almost gone in one week, had gone in four weeks, although a trace was found when the urine was again tested two months later.

The same author³³ has elsewhere reported a third example of post-partum amaurosis.—The patient, aged 27 years, was within a couple of weeks of her fifth confinement. There was a history of recent swelling of the extremities and of headaches and four fits had occurred. She was admitted comatose. The urine contained blood and albumin (8 per 1,000 Esbach). The os tincae was mechanically dilated, and the baby extracted by version. Next day, the woman being then conscious, she said she could not see, although the fundus oculi showed no changes to account for the blindness. Twelve days after delivery, she had fully recovered, and her urine was free from albumin.

In extremely rare cases it would seem that puerperal amblyopia may appear under the guise of a temporary hemianopsia. A case of this kind was reported by F. Lehmann³⁴.—A woman, aged 27 years, had suffered in the last month of her first pregnancy from headache and œdema of the legs. She was brought to bed of a healthy boy on June 4th. The labour was attended by little loss of blood. Twelve hours later, the patient found that she could not see the left half of her husband's face, the right half remaining visible. On June 5th she could only tell light from dark; the pupillary reactions were normal; the fundi showed no ophthalmoscopic changes. Pulse 84, very tense. Headache. On June 6th the urine was discovered to include a trace of albumin. The woman could recognize everything distinctly, but, as she remarked, "*alle haben keine Nasen*." Upon examination, it was found that she could count fingers peripherally, and could read letters. But there was an absolute central scotoma in each field, which at a distance of $1\frac{1}{2}$ feet from the face, had the dimensions of a five mark piece. The pupils and fundi were normal. On June 8th, sight was completely restored. The urine, however, still contained a trace of albumin. On June 16th, when the woman was discharged, the eyes were normal, and the urine was free from albumin. At no time were puerperal convulsions present in this female.

Another case of this kind has been reported by Ludwig Knapp.³⁵ A primipara, aged 27 years, was admitted in deep coma, and after dilatation of the cervix by Bossi's instrument, she was delivered by version of an asphyxiated infant. When she became conscious, she complained of disturbance of vision, and upon examination by Czermak twenty-four hours after delivery, it was found that sight was extremely defective as regards the right half of the visual fields. Beyond some pallor of the optic discs, the fundi were normal. The ocular symptoms disappeared within the next few days.

It is, I suppose, possible that the peculiar condition present in Knapp's case had resulted from the partial recovery of an amaurosis that had earlier been general; much as in Lehmann's case, where it was evidently the forerunner of an almost complete amaurosis.

Hiram Woods has reported three cases of permanent hemianopsia after delivery, but the first alone carries any conviction to my mind. The cases are as under:—

1. A woman of 33 years consulted Woods^{32 36} on account of a left hemianopsia, complete except for a small portion in the superior quadrant, which had followed about the fifth day after the birth of her first child, eighteen months previously. Instrumental delivery had been effected three hours after an eclamptic convulsion, lasting for not longer than five minutes. For four days after the confinement there was persistence of retinal impressions. During the night headache was atrocious. Towards morning

she fell asleep and on awakening (to quote the patient's graphic words) "suddenly, as if some one on my left hand had pulled down a blind, my sight on the left side went out." Traces of albumin had been found in the urine in the sixth month and persisted until the end of pregnancy. The urine, moreover, was diminished in amount, while the out-put of urea varied from 7.5 to 10.5 grammes *per diem*.

2. A woman, 37 years of age, during the fourth month of her pregnancy was affected with headache and diminished excretion of the urine, which contained no albumin and ten grammes only of urea. Under a milk diet the amount of urine increased to 67 ounces and the urea rose to sixteen grammes, and all symptoms disappeared. On January 1st, after a normal labour, the woman was delivered of a healthy baby. On the third day there were flashes of light in the right eye, and next day there was intense pain, particularly on the right side of the head. On January 13th there was complete hemi-anæsthesia of the right side. On the thirteenth day of the puerperium the urine was found to include a trace of albumin. When the woman was examined by Woods in May, the fields showed hemianopic defects, and were in much the same state when she was seen five years later.

The grouping of symptoms in the foregoing case is suggestive of a functional origin. That hemianopsia may occur as the result of hysteria is shown by cases reported by myself as well as by several other writers (THE OPHTHALMOSCOPE, May, 1909).

3. This patient first noticed visual defect on the right side when up for the first time after her sixth confinement. There was right hemianopsia. The history suggested syphilis, but the notes of the case are so scanty as to be inconclusive.

In a few of the cases, among which may be mentioned those of John C. W. Lever and F. Lehmann, there was evidence of the existence of a definite central scotoma in the field of vision. The scotoma can be best explained on the view that a retro-ocular neuritis existed, and had attacked the papillo-macular bundle of nerve-fibres. We know that many such cases are the result of an intoxication with various chemical agents, such as tobacco, alcohol, and carbon disulphide. There is no reason whatever to suppose that an unidentified toxin, the product of pregnancy, circulating in the mother's system, may not under some circumstances act in a way similar to the chemical poisons enumerated above. Moreover, the analogy with the central scotoma sometimes observed in cases of diabetes or of ptomaine poisoning is very close. But further observations are needed in this direction.

Comments.

Although for convenience of description the cases abstracted above have been arranged in three groups, yet it is probable that their ætiology is essentially similar whether they occur before, during, or after labour. Certain points stand out prominently:—

1. The existence in most of the cases of convulsions—so-called "puerperal eclampsia."
2. The presence in the urine, which is usually excreted in scanty amount, of albumin, blood, and various kinds of tube-casts.
3. The existence of headache.
4. The co-existence of œdema of the eyelids, face, and elsewhere.

That the defect in sight may form a premonitory sign of puerperal eclampsia is shown by the cases of Jardine, Greve, Hood, Weber, and my own (No. 2). This method of onset has been recognized by obstetricians for many years. "When women in labour frequently complain of blindness,

they are in danger of falling into convulsions," wrote Thomas Denman³⁷ a hundred years ago and more. "Indistinct vision or blindness" was enumerated among the premonitory symptoms of puerperal convulsions by Joseph Hopkins,³⁸ who wrote as long ago as 1820. Fordyce Barker⁴⁰ remarked that if headache was the most frequent precursory symptom of eclampsia, impaired vision was the most significant. A very remarkable instance of puerperal eclampsia, preceded for twenty-four hours by total blindness, has been reported by De Witt.³⁹ To turn to more modern writers, among the prodromal symptoms of eclampsia enumerated in the *American Text-Book of Obstetrics*⁴¹ we find "flashes of fire before the eyes or progressive loss of sight." Again, from Henry Jellett's *Short Practice of Midwifery* we learn that "complete or partial, temporary or persistent, loss of vision" is one of the more immediate prodromal symptoms of eclampsia.

But it is more common for the amblyopia or amaurosis to supervene after one or more "fits" have taken place. This contingency also is admitted by writers upon the subject. Denman,³⁷ writing more than a century ago, gave particulars of a lady who in the latter months of her pregnancy had many attacks of violent pain in the head. When she fell into labour, she became blind and had a convulsion. The child had been dead for about a fortnight. The blindness remained in some measure for several days after her delivery (*loco citato*, page 371). Wm. P. Dewees, an American physician who published *A Compendious System of Midwifery* in 1825, reported eight cases of puerperal convulsions, of which no fewer than five showed more or less affection of sight (*loco citato*, p. 502). Jellett (*loco citato*, p. 325) states that "total or partial loss of vision or of memory ensues, and if the patient recovers, may persist for a considerable period after the fits have ceased." Again, Robert Jardine (*loco citato*¹⁵, p. 391) has twice seen patients suffering from puerperal eclampsia absolutely blind during the labour, although both recovered their sight after delivery.

Finally, eclampsia need never occur, as in my own patient (No. 1) and in some of the other cases mentioned in the present communication.

The explanation of puerperal eclampsia is still *sub judice*. By most authorities, however, it is nowadays regarded as something altogether distinct from uræmia. As pointed out by J. Clifton Edgar⁴², cases of ordinary chronic interstitial nephritis, the one affection of the kidney almost certain, given time, to produce uræmia, are little influenced by pregnancy. As he remarks, "This fact has doubtless done more than any other to convince obstetricians that some radical differences underlie uræmia and the toxæmia of pregnancy." The best modern opinion tends to look upon eclampsia as the result of a poisoning of the woman's system with the products of her own metabolism and, possibly, with those of the fœtus. If the emunctories are working well these dangerous products are safely removed. On the other hand, when the liver, kidneys, spleen, intestines, or skin fail, convulsions (eclampsia) and other signs of toxæmia, of which I suggest amaurosis is not the least important, are only too likely to ensue. Under the circumstances named disturbances of excretion, as evidenced by headache, œdema, albuminuria, and decrease in the amount of urine, are common.

It is reasonable to suppose that a toxæmia at any period during pregnancy, labour, or child-bed may culminate in: (1) eclampsia, (2) amaurosis,* or (3) eclampsia and amaurosis. On this view, amaurosis and eclampsia are co-ordinate phenomena, the result of a toxæmia common to both, a remark

*A similar view has been taken by J. Whitridge Williams⁴³, according to whom the toxæmia of pregnancy "may be accompanied by disturbances of vision, which sometimes amount to total blindness" (p. 457)

that applies equally to the albuminuria so frequently present. All the cases included in the present communication can be readily explained in this way.

The fact is probably not without significance that amaurosis of a comparable character has been observed in association with severe vomiting of pregnancy—*hyperemesis gravidarum*, as it is sometimes termed. A case of this kind was reported by M. Landsberg,⁴³ of Berlin, in 1878. The patient, a woman, aged 31 years, had suffered from much sickness during the first half of her first pregnancy. After an intermission, she was seized with gastritis, followed by jaundice and recurrence of the vomiting. After three days, when the emesis was beginning to improve, she remarked a flickering before both eyes and a rapid diminution in the power of sight, and when seen on the next day by the author, she could only tell light from darkness, although the pupils showed no changes and the fundi were normal. The urine did not contain albumin; there were no headaches. On the same evening, the woman could recognise the position of a flame at a distance of eight feet, and on the following day vision was entirely regained. Four days after the onset of the amaurosis, the patient could read fluently Snellen 1·5. The vomiting of pregnancy (at all events, its severer forms) is now regarded by some of the most acute observers as due to auto-intoxication, since in fatal cases changes have been discovered in the liver and kidneys which closely resemble those found in cases of fatal eclampsia. On this view, the amaurosis is probably due to the same cause, namely, a toxæmia. It falls into line, therefore, with the cases described in other parts of the communication.

That the co-existence of œdema of the face and elsewhere, together with albumin in the urine and headache, has led to many cases of toxic blindness being classed with uræmic amaurosis is certain. In this connection the cases of Kraus, Matteson, Eastlake, and Weber (third case), where albumin was not found in the urine, although looked for, are of great importance.* In some of the other cases albumin, although present, was in small amount, and seeing that such a condition is present in 50 per cent. of all pregnant women (H. M. Little), much stress cannot be laid upon the observation as indicating organic kidney mischief. Another significant fact is that several of the women who were affected with amaurosis eventually recovered good health and had other children, which is scarcely likely to have happened if they had ever really suffered from uræmia. Again, the occurrence of eclampsia in some pregnancies and of amaurosis in others is an argument against the dependence of the one condition upon the other, and in favour of the dependence of both upon some common factor. This is seen to perfection in the striking case by Litzmann, quoted on page 9. A case reported in 1836 by J. T. Ingleby⁴⁴ may serve to emphasise this important point. In her first pregnancy Ingleby's patient developed puerperal convulsions, followed by stupor, continued for about twenty-four hours. In a subsequent pregnancy she was attacked with complete amaurosis, which lasted during the whole period of her labour. Vision was gradually restored.

Indeed, with regard to this point I find myself in accord with Hiram Woods,³² of Baltimore, who has stated that in view of "recent pathological investigations in the obstetrical field . . . there is doubt as to whether the term uræmic should be applied to the blindness occurring in connection with puerperal eclampsia." Fauconnier¹⁴, also, is of opinion that the amaurosis, as

* Although the existence of albumin was not affirmed in many other cases, it was not expressly denied (Ramsbotham, Hecker, Litzmann, Reuling, Woods, Eliasberg, Crosse, Dewees, Cunier, Angear, Ringland, Merriman, Lever, Bomal, and Webster). It is therefore open to question whether the urine was or was not examined. For this reason such cases have been excluded from the foregoing list.

well as the albuminuria of pregnancy, is to be regarded as a manifestation of gravidic hepato-toxæmia.† He further believes that the so-called eclamptic or uræmic blindness is an outcome of the same species of auto-intoxication.

That opens up another point, namely, the propriety of speaking of such cases as if they were the result of puerperal eclampsia. That the amaurosis may be a premonitory sign of eclampsia, as in my second case, renders it much more probable that the two conditions are dependent upon a common cause. Again, amaurosis, precisely similar to that met with during or after eclampsia, may be observed, although rarely, without eclampsia. Several such cases are mentioned in this communication by Weber, Reuling, Markuse, Eliasberg, Lehmann, Ellett, Sir James Y. Simpson, Williams, Angear, Matteson, Ringlead, Lever, Bomal, and Ramsbotham. The first of my own cases is quite conclusive as regards the point.

But when all is said and done it must be admitted, I think, that the distinction between the two conditions—uræmic and toxic amaurosis—in a given case may be difficult or even impossible. That such a distinction exists can nevertheless scarcely be denied by anybody who has studied the facts. Even the amount of urea excreted by the kidneys cannot be depended on for differentiation, since Williams (*loco citato*⁴⁵, p. 457) states that in the toxæmia of pregnancy there is a reduced out-put of urea, and, indeed, in such cases the sole urinary abnormality may be a marked diminution in the quantity of that substance.

Conclusions.

- (1) That a form of amaurosis or amblyopia, not accompanied by ophthalmoscopic signs, or, at least, by none adequate to account for the condition, may supervene during pregnancy, parturition, or the puerperium.
- (2) That rarely it may assume the form of an hemianopic defect or of a central scotoma in the fields of vision, and still more rarely of hemeralopia.
- (3) That it is often associated with such signs and symptoms of toxæmia as headache, œdema, eclampsia, and scanty urine, containing albumin, casts, and blood.
- (4) That it appears to form one of the rarer manifestations of toxæmic poisoning.
- (5) That it is not proved to be dependent upon uræmia, although it has usually been confused with so-called "uræmic amaurosis."
- (6) That it recovers, as a rule, completely within a few hours or days.

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† In view of the characteristic *post-mortem* change found in the liver of pregnant women suffering from toxæmia, it is believed, especially in France, that certain toxins ordinarily rendered powerless for harm by the metabolism of the liver, gain entrance to the blood-stream, and thus cause the symptoms. The condition is spoken of as "hepato-toxæmia."

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Note by Dr. W. P. Herringham.

These cases of amblyopia or amaurosis coming on after pregnancy are uncommon. They are generally accompanied by fits, and almost, but not quite, always by albuminuria. They are invariably transient. When amblyopia does not pass off in a few days it is due to something else.

The pathology of the amblyopia is undoubtedly the same as that of the eclampsia which it accompanies. This latter is still in dispute. Some maintain that it is due to uræmia. As we do not know what uræmia is, this does not greatly clear matters. But that chronic or severe disease of the kidney is always present, we cannot, I think, in the presence of many histories of subsequent good health, believe. In some cases chronic renal disease exists. If it be said that in the others the condition is one of acute or subacute

nephritis, then I can only say that I have never seen transient amblyopia, without any change in the fundus, in acute or subacute cases except in connection with pregnancy.

There are, as is well-known, other theories of eclampsia. One of them, that of placental toxæmia, as put forward by Liepmann, ascribes the renal affection, whether transient or lasting, to the same toxæmia as causes the convulsions. It would be foolish in me to pretend to an opinion on a matter which gynecologists still dispute. The interest to me is rather this.—It seems certain, on any shewing, that pregnancy and confinement have a peculiar effect upon the kidneys. It sometimes, at any rate, shows itself in severe albuminuria when events prove that it has not produced lasting structural disease in the renal tissue. The same conditions also produce upon the nervous centres effects much resembling those produced by organic renal disease. It seems not impossible that by careful studies of such cases as these of Mr. Stephenson, we may be able to throw light on what must be a similar condition, that usually called uræmia.

The following three cases are more or less analogous to the ones reported by Mr. Stephenson :

CASE 1.—*Chronic nephritis : toxic amblyopia : slight peripheral choroiditis : recovery.*

Agnes, J——, 27 years. Admitted to Queen Charlotte's Hospital on January 10th, 1902, and discharged January 29th, 1902, under the care of Dr. W. R. Pollock. Primipara. The urine was almost solid with albumin. It contained granular casts and epithelium. The urea was not estimated. Marked oedema of legs. No uræmia. Heart enlarged, and arteries thickened.

History.—No history of scarlet fever or of rheumatism. None of nephritis. Swelling of legs began about December 16th. Patient has been passing much less urine than usual. The lower eyelids have been swollen for a week. No epistaxis.

After the woman had been in labour for upwards of thirteen hours, forceps were applied on account of her exhausted condition. By these means a baby was delivered, and this was followed by the expulsion of a second baby, a breech presentation. Both infants were alive.

On January 12th, amblyopia was noticed on awaking, and was worse in the left than in the right eye. On January 14th the sight was better. On January 16th the following notes were made: patient pale and rather thin. No cardiac murmur. Apex beat just internal to nipple line. The pulse regular. Artery slightly thickened; pulse not of high tension. No oedema (the oedema of the legs disappeared on the day following labour). The urine, now passed in full natural amount, contains about 0.4 per cent. albumin. When examined with the ophthalmoscope, the optic discs were seen to be clear and pale. There was no retinitis. The retinal vessels for the most part were quite natural, but one in the upper-outer quadrant of the left fundus wiry and not transparent. January 21st—No oedema. Lips red. Heart and pulse as before. The urine, which was natural in amount, was acid, turbid, and of amber colour. It contained, in addition to casts, nearly 0.2 per cent of albumin. Sight was much improved. With plus 1.D. sph. can read a notice across the ward nearly as well as I with the right though not with the left eye; whereas when the dulness of sight began, the patient could not distinguish the features of anybody standing near. In the right eye there were a few small patches of yellowish mottling about the yellow spot, and less in the left eye. Mr. Stephenson, who examined the case, noted, in addition, slight peripheral choroiditis, but could not ascribe the amblyopia to the fundus changes.

The patient was discharged on January 29th, 1902. She was then in good health, and her babies were thriving.

CASE 2.—*Eclampsia and amblyopia.*

Emily, S——, aged 20 years, was an inmate of Martha Ward at St. Bartholomew's Hospital, London, when I was Registrar. The notes of the case unfortunately are very imperfect, but the woman suffered from eclampsia and amblyopia. The urine averaged 40 ounces *per diem*. Its specific gravity was 1021, and it contained a trace only of albumin. As 400 grains of urea were excreted daily, the case did not look like one of chronic nephritis.

CASE 3.—*Puerperal eclampsia and temporary amaurosis.*

Ann F——, 24 years. Admitted to Faith Ward in St. Bartholomew's Hospital, London, on November 17th, when I was Registrar to the Hospital. She had been delivered of her first baby, a boy, on October 14th. She had previously enjoyed good health. The labour was uncomplicated. The woman remained well until November 3rd, when her face began to swell. On November 10th, she went out on a cold day, an exposure which was followed by swelling all over. On November 13th the sight began to fail. On November 17th she was unable to see at all. At 2 o'clock p.m. on that day she was seized with epileptic convulsions, of which she had a couple before she was admitted to the Hospital. There were several after. *On admission.*—Heart-sounds clear. High tension pulse.

Urine scanty; much albumin; no casts. November 21st.—Pulse 84 per minute. Urine contains a trace of albumin only. November 22nd.—Pulse 78. Urine, sp. gr. 1014, contains no albumin. November 23rd.—Urine cloudy, and sp. gr. 1015. An ophthalmoscopic examination, made on this date, showed that the fundus was entirely normal. Sight appeared to have returned to its natural condition on this date, the dimness having lasted since the 13th instant. November 24th.—Pulse 70 per minute. Urine, sp. gr. 1014, no albumin.

Speaking for myself, I have never seen this kind of amaurosis in ordinary nephritis. If it occurred, it would surely be met with in the scarlatinal cases. I wrote, therefore, to Dr. F. Foord Caiger, Medical Superintendent of the South-Western Fever Hospital of the Metropolitan Asylums Board, thinking that his special experience might possibly supply what mine lacked. The following was his reply:—"I have never, to my knowledge, met with an instance of amblyopia or blindness in scarlatinal nephritis, either in the acute or the early stage of the chronic affection. . . . After the lapse of a few weeks, three to six, the great majority get quite well, as far as clinical evidence goes. And in the few one keeps as long as 12 to 16 weeks or more . . . on account of the persistence of albumin, even assuming they retain a trace at the time of their discharge, I have never seen any visual trouble supervene during their stay in hospital. In fact, I feel pretty certain it does not occur in children, at any rate. I know of no observations bearing on the subject, either here or elsewhere."